

REMARKS

Favorable reconsideration is respectfully requested.

The claims are 1-12.

The above amendment is responsive to points set forth in the Official Action.

The above amendment incorporates the cyclic trimer content feature of claim 2 in claim 1.

The significance of this amendment will be discussed below.

Claims 1-12 have been rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP 06-234834 and JP 03-047830.

This rejection is respectfully traversed.

The present invention has the following features.

(1) The starting material

The starting material of the present invention is bis (2-hydroxyethyl) terephthalate (BHET). The BHET has (i) an ion content of 10 ppm or less and (ii) an acid value of 30 mgKOH/g or less.

The starting material in JP 06-234834 (D1 hereinafter) and JP 03-047830 (D2 hereinafter) is terephthalic acid (TA hereinafter) or an ester forming derivative of TA. TA or an ester forming derivative of TA are esterified with ethylene glycol (EG) in D1 or D2.

The starting material of the present invention i.e. BHET has the EG unit. Thus, BHET does not have to be reacted with EG.

Therefore, the present invention is very different from that of D1 and D2 in starting material.

(2) The acid value of the BHET starting material herein is 30 mgKOH/g or less.

(3) The present invention is based on the finding that PET which contains low cyclic trimer can be produced by using BHET having an acid value of 30 mgKOH/g or less as a starting material (page 4, lines 14-32 of the present specification) .

In contrast, the acid value of D1 and D2 is estimated to be very high. It is to be estimated about 170 mgKOH/g by the following calculation.

(2-1) JP 06-234834 (D1)

In Example 1 of JP 06-234834 (D1), TA and EG are reacted under the following conditions.

(i) feed raw material (converted to "g" units)

TA (Mw=166) : $1437 \text{ g/hr} \times 2\text{hr} = 2874 \text{ g} = 2874/166 = 17.3 \text{ mol}$

EG : $645 \text{ g/hr} \times 2\text{hr} = 1290 \text{ g}$

Total : $2874 + 1290 = 4164 \text{ g}$

(ii) water and EG distilled off

203 g of water (Mw = 18) and 3 g of EG are distilled off

(iii) remaining raw materials

$4164 - (203 + 3) = 3958 \text{ g}$

(iv) Unreacted TA

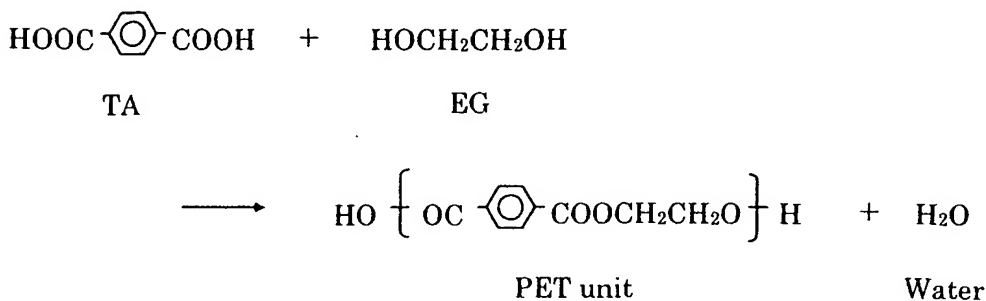
According to the reaction scheme below, 1 mol of TA produces 1 mol of water. Thus, the amount of TA reacted is $203/18 = 11.3 \text{ mol}$. The amount of initial TA is 17.3 mol. Thus, the amount of TA which is not reacted is $17.3 - 11.3 = 6 \text{ mol}$.

(v) Acid value

2 mol of KOH (Mw = 56.11) is reacted with 1 mole of TA.

$6 \text{ mole} \times 2 \times 56.11 \text{ g KOH} = 673.3 \text{ g KOH}$

The acid value of remaining raw materials is $673.3 \text{ g KOH} / 3958 \text{ g} = 170 \text{ mg/g}$



(2-2) JP 03-047830 (D2)

Example 1 of D2 is the same as Example 1 of D1.

(4) Cyclic trimer

According to the table below comparing the content of cyclic trimer, it is clear that the present invention has an advantageous effect over D1 and D2.

	After SSP (ppm)	After molding (ppm)
Example 1 of D1 (with hot water treatment)	3100	4000
Comparative Example 1 of D1 (without hot water treatment)	3100	5000
Example 1 of D2 (with hot water treatment)	3100	3500
Comparative Example 1 of D2 (without hot water treatment)	3100	5000
The present invention (claim 1)	2000 or less	-
Example 1 of the present Specification (SSP = solid state polymerization)	1630	2730

Thus, the present method unobviously provides a product with low cyclic trimer both before and after molding

Foregoing reasons, it is apparent that the present claims are neither disclosed or suggested by the cited references alone or in combination.


Lessly, enclosed herewith is a copy of the English translation of the International Preliminary Report on Patentability

No further issues remaining, allowance of this application is respectfully requested.

If the Examiner has any comments or proposals for expediting prosecution, please contact undersigned at the telephone number below.

Respectfully submitted,

Shuji INADA et al.

By 
Matthew M. Jacob
Registration No. 25,154
Attorney for Applicants

MJ/asd
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
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